CLAIMS

1. An isolated nucleic acid molecule comprising a nucleotide sequence selected from:

a) SEQ ID NO:3, or a fragment thereof;

b) SEQ ID NO:4, or a fragment thereof;

c) a sequence homologous to SEQ ID NO:3 or SEQ ID NO:4, or a fragment thereof;

d) a sequence that encodes a polypeptide comprising SEQ ID NO:5, or a fragment thereof; and

e) a sequence that encodes a polypeptide comprising an amino acid sequence homologous to SEQ ID NO:5, or a fragment thereof;

wherein the nucleic acid molecule encodes at least a portion of a tankyrase homolog protein.

2. The nucleic acid molecule of claim 1, which is DNA.

3. The nucleic acid molecule of claim 1, which is RNA.

4. The nucleic acid molecule of claim 2, wherein the nucleotide sequence comprises SEQ ID NO:4.

5. An isolated nucleic acid molecule comprising a nucleotide sequence complementary to at least a portion of SEQ ID NO:3 or SEQ ID NO:4, wherein a complement of the nucleic acid molecule encodes at least a portion of a tankyrase homolog protein.

6. The nucleic acid molecule of claim 5, which is an antisense oligonucleotide directed to SEQ ID NO:3 or SEQ ID NO:4.

7. The nucleic acid molecule of claim 6, wherein the oligonucleotide is directed to a regulatory region of SEQ ID NO:3 or SEQ ID NO:4.

8. The nucleic acid molecule of any preceding claim, for use in therapy or diagnosis.

9. An expression vector comprising a nucleic acid molecule of any preceding claim.

10. The vector of claim 9, which is a plasmid or a viral particle.

11. The vector of claim 10, which is selected from adenoviruses, parvoviruses, herpesviruses, poxviruses, adeno-associated viruses, Semliki Forest viruses, vaccinia viruses and retroviruses.

12. The vector of any of claims 9 to 11, wherein the nucleic acid molecule is operably connected to a promoter selected from simian virus 40, mouse mammary tumor virus, long terminal repeat of human immunodeficiency virus, Maloney virus, cytomegalovirus immediate early promoter, Epstein-Barr virus, Rous sarcoma virus, human actin, human myosin, human hemoglobin, human muscle creatine and human metalothionein.

13. The vector of any of claims 8 to 12, for use in therapy or diagnosis.

14. A host cell transformed with the vector of any of claims 9 to 12.

15. The host cell of claim 14, which is a bacterial cell, e.g. *E. coli*.

16. The host cell of claim 14, which is a yeast, e.g. *S. cerevisiae*.

17. The host cell of claim 14, which is an insect cell, e.g. is *S. frugiperda*.

18. The host cell of claim 14, which is a mammalian cell, e.g. selected from chinese hamster ovary cells, HeLa cells, African green monkey kidney cells, human 293 cells and murine 3T3 fibroblasts.

19. An isolated polypeptide encoded by the nucleic acid molecule of any of claims 1 to 8.

20. The polypeptide of claim 19, which comprises SEQ ID NO:5.

21. The polypeptide of claim 19, which comprises an amino acid sequence homologous to SEQ ID NO:5.

22. The polypeptide of claim 21, which comprises at least one conservative amino acid substitution compared to SEQ ID NO:5.

23. The polypeptide of claim 19, which comprises a fragment of SEQ ID NO:5.

24. The polypeptide of any of claims 19 to 23, for use in therapy or diagnosis.

25. Use of a polypeptide of any of claims 19 to 23, for the manufacture of a medicament for inducing an immune response to the polypeptide.

26. A method of producing a polypeptide comprising SEQ ID NO:5, or a homolog or fragment thereof, comprising the steps of:

a) introducing a vector of any of claims 9 to 12 into a compatible host cell;

b) growing the host cell under conditions for expression of the polypeptide; and

c) recovering the polypeptide.

27. The method of claim 25, wherein the host cell is lysed and the polypeptide is recovered from the lysate.

28. The method of claim 26, wherein the polypeptide is recovered by purifying the culture medium without lysing the host cell.

29. An isolated antibody which binds to an epitope on a polypeptide of any of claims 19 to 23.

30. The antibody of claim 29, which is a monoclonal antibody.

31. The antibody of claim 29 or claim 30, for use in therapy or diagnosis.

32. A kit comprising an antibody which binds to a polypeptide of any of claims 19 to 23, and a negative control antibody.

33. A method for identifying a compound which binds tankyrase homolog protein (THP), comprising contacting THP with a compound, and determining whether the compound binds THP.

34. The method of claim 33, wherein the determining comprises a protein binding assay, e.g. selected from a gel-shift assay, Western blot, radiolabeled competition assay, phage-based expression cloning, co-fractionation by chromatography, co-precipitation, cross-linking, interaction trap/two-hybrid analysis, southwestern analysis and ELISA.

35. A method for identifying a compound which binds a nucleic acid molecule encoding tankyrase homolog protein (THP), comprising contacting the nucleic acid molecule encoding THP with a compound, and determining whether the compound binds the nucleic acid molecule.

36. The method of claim 35, wherein the determining comprises a gel-shift assay.

37. A method for identifying a compound which modulates the activity of tankyrase homolog protein (THP), comprising contacting THP with a compound, and determining whether THP activity has been modulated.

38. The method of claim 37, wherein the activity is ADP-ribosylation or TRF1 binding.

39. A compound identified by the method of any of claims 34 to 38.